

Report on the Alcyoniid and Gorgoniid Alcyonaria of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S. By STUART O. RIDLEY, M.A., F.L.S., late Assistant in the Zoological Department, British Museum.

[Read 5th May, 1887.]

(PLATES XVII. & XVIII.)

THE collection of the above groups of Alcyonaria put into my hands for description by Dr. Anderson did not at first sight exhibit indications of any great importance. On the contrary, the dry specimens, which formed the great bulk of the collection, seemed, as regards their specific characters, as well as their condition of preservation, of a very ordinary character; and the impression left on my mind was that of a small series of typical and common Indian Ocean species, with possibly a few exceptions in the shape of new species. Among the spirit-specimens I observed one form apparently of considerable interest. In the latter case I was not altogether misled (see below, *Lobophytum madreporoides*), it being a representative of a group which has been distinguished generically from its allies since the time when I last had a collection of Alcyonaria in my hands for description. But in my judgment on the collection as a whole I was entirely in the wrong; for not only is the number of new species greater than I had estimated, and this to the extent of nearly 50 per cent. beyond my original opinion, but the *quality* of the new forms, if the term is admissible, is remarkably high. Among the Gorgoniidæ one form occurs which may perhaps ultimately prove an addition to the comparatively small number of genera in that family so rich in species, besides two other novelties (see *Psammogorgia? plexauroides*, *infra*). We have a new addition to the small family Melithæidæ in the form of a *Mopsella*, characterized by a fine spiculation and by external beauty. Finally the *Spongodes* seem to be all new and of a type hitherto but little known. Of the whole collection, more than 50 per cent. of the species are described here for the first time. This large percentage of novelties is no doubt greatly due to the comparatively slight amount of work which has been done among the Alcyonaria of the Indian Ocean area, those of the Red Sea,

the Mascarene and Seychelles Islands having alone, so far as my knowledge goes, been at all adequately described. Possibly a species or two here set down as new may have been referred to by one or other of the older writers, but, if so, my researches have at any rate failed to detect them.

Looking at the Alcyonarian Fauna of the Burmese coast generally, we see that it is in no way behind that of any other part of the Indian Ocean, so far as known to us, and in some ways it is decidedly superior to that of other districts. Thus it produces a considerable contingent of the soft and fleshy Alcyoniid section of the Order, *Spongodes* and *Lobophytum* being well represented; I myself described a novel type of an allied genus, *Nephthya*, from this coast (Ann. & Mag. Nat. Hist. 5th ser. vol. ix. p. 184); and thus all the members of this group known to us from this coast seem to be peculiar to it. In its richness in species of the family, however, it only agrees with what we know of the other northern parts of the Indian Ocean area, the Red Sea, and Ceylon; hereby, however, differing somewhat, so far as our information extends, from the more southern parts of that ocean (Australia and the Cape) in the proportion of species of this family to the total number of species collected. Thus the Red Sea is rich in *Alcyonium*, *Sarcophytum*, and *Lobophytum* (see Klunzinger, Korall. Roth. Meeres), and exhibits a very fair muster of the more elegant *Spongodes* and *Nephthya*. Ceylon, again, as shown by collections (as yet undescribed) deposited in the British Museum by Dr. Ondaatje, and made by himself and elucidated by drawings, is rich in *Alcyonium*, *Sarcophytum*, or allied forms. *Spongodes*, on the other hand, seems scarce. Gorgoniids, well represented here and in Ceylon, are comparatively scarce in the Red Sea, even typical Indian Ocean forms being absent there but present here. The Burmese fauna, then, may be shortly characterized as distinctly of Indian Ocean *facies*, but with a large proportion of species peculiar to it, so far as is known at present*.

* I should perhaps except Kurrachee from those northern districts of the Indian Ocean with a good Alcyonarian fauna. Among the numerous Cœlenterata received at the British Museum from that locality through the energetic Curator of the Kurrachee Museum, Mr. A. Murray, but as yet, from lack of time and opportunity, unworked out, there are, so far as my memory serves me, hardly any Alcyonaria of these groups. There are, however, some Gorgoniids among them.

Dr. Anderson tells me that these Alcyonaria grow just below low-water mark, appearing at the surface at low tide. With regard to the condition of the collection, most of the species are represented by specimens in spirit, but the condition of some of the dry specimens was decidedly unfavourable for study.

List of Species.

Family *ALCYONIIDÆ*.

1. *Lobophytum madreporoides*, n. sp.
2. *Spongodes aurora*, n. sp.
3. — *boletiformis*, n. sp.
4. — *nigrotincta*, n. sp.

Family *GORGONIIDÆ*.

5. *Plexaura indica*, n. sp.
6. *Psammogorgia?* *plexauroides*, n. sp.
7. *Gorgonia oppositipinna*, n. sp.
8. *Gorgonella umbella*, *Esper*.
9. *Juncella gemmacea*, *Milne-Edwards & Haime*, var.
10. — *fragilis*, *Ridley?*, var.
11. *Ctenocella pectinata*, *Pallas*.
12. *Suberogorgia suberosa*, *Pallas*.

Family *MELITHEIDÆ*.

13. *Mopsella planiloca*, n. sp.

Family *ALCYONIIDÆ*.

LOBOPHYTUM, *Von Marenzeller*.

Guided by Von Marenzeller's recent important paper on this and allied forms (*Zool. Jahrbücher*, i. p. 341, pl. ix.), I distinguish the following species as new to science.

LOBOPHYTUM MADREPOROIDES, n. sp. (Plate XVII. figs. 7-11.)

Corallum stipitate, with distinct pileus; height of stalk in young specimens about the same as its diameter immediately under the pileus, irregularly shaped (angular), marked with numerous shallow longitudinal grooves. Pileus extending beyond stalk to the extent of more than half the diameter of the latter, incised at margin almost to stalk, margin much contorted; the centre occupied by erect digitate or palmate lobes. Upper surface of pileus of shagreen-like appearance to the naked eye,

besprinkled with the autozooids at intervals of about $\cdot 5$ to 3 millim. on the edges, of about 2 to 7 millim. (usually about 4 millim.) on the faces of the lobes and folds of the pileus. Siphonozooids depressed, about two in number to a millimetre; the autozooids on margins of folds of pileus, and on parts of their faces, having their margins flush with the surface; those on the upright lobes and to some extent on the faces of the folds (and more so in older than younger colonies) prominent, rising gradually, like truncate hillocks, up to about 1.5 millim. high, a bare 1 millim. in width at opening. Texture in spirit stiff but very brittle.

Colour in spirit cream-colour, or dirty white, or with a very slight reddish or brownish tint.

Spicules (measurements including tubercles):—

A. *Zoid-bearing portion*.—I. In walls of siphonozooid tubes, fusiform; those near outside of colony more cylindrical. (1) Broader; both ends tapering to sharp points or blunted; tubercles in 6–8 distinct whorls, size about $\cdot 25$ to $\cdot 29$ by $\cdot 088$ to $\cdot 09$ millim.; tubercles generally low, broad, flattened, with numerous but slight secondary tubercles. (2) Similar to (1), but rather slenderer, and with only a few median tubercular whorls well pronounced, the tubercles narrower, more punctiform, size about $\cdot 29$ to $\cdot 35$ by $\cdot 05$ millim.—II. (3) On surface of corallum, subclavate, similar to (2), but with one end blunted, the other fairly sharp; beset with small simple tubercles, and with about four rather irregular whorls of medium-sized, not very broad or rough tubercles, size about $\cdot 21$ – $\cdot 25$ by $\cdot 053$ millim.

B. *Stem* (special spicules).—1. *Deep*:—Subcylindrical, *i. e.* tapering to more or less rudely blunted, much tubercled ends, often showing a more or less distinct subterminal whorl of tubercles; shaft with broad bare, median space, and two very pronounced whorls of broad flattened tubercles covered by minute secondary ones, with distinct spaces between these whorls themselves and between the whorls and the ends; size about $\cdot 21$ to $\cdot 25$ by $\cdot 09$ to 1 millim. Also large whorled fusiform spicules (? belonging to siphonozooid tubes). 2. *Superficial*:—Chessman-like, *i. e.* clavate, with blunt outer end, covered with rather prominent simple, or almost simple, rounded or nearly pointed tubercles; the shaft rather slender, bearing two median, very definite wheel-like whorls of rather prominent roughened or filigreed tubercles, with a distinct intermediate bare space; the inner end more or less pointed, with tubercles resembling those

of the outer end scattered up and down it without regular order. Set vertically to the surface, about one layer deep; size up to about .14 by .052 to .06 millim. Spicules all colourless and transparent.

Hab. Sullivan Island, sublittoral.

Two specimens of this species came under my notice for description. The largest, when perfect, must have been about 3 inches in height and greatest diameter respectively, stem just below pileus about 2 by $\frac{3}{4}$ inch in diameter and $1\frac{3}{4}$ in height, erect lobes up to about 1 inch high, marginal folds about 3 to 6 mm. thick. A younger and less perfect specimen differs in the inferior prominence of the autozooids and in the dirty white colour. A slight colour ring indicated on the lower part of the stem in both specimens is perhaps due to staining by immersion of this part in mud. The species, from its prominent autozooids, has a considerable resemblance to a low-caliced *Madrepora*. I see no hint of such a character in either of the two described forms obviously not distantly related to it—*L. (Sarcophytum, Klunzinger) pauciflorum*, Ehrb. (Red Sea), and its var. *validum*, Von Marenzeller (Andaman Islands, Tonga Islands). It differs from the typical form of this species, but agrees with the variety, in its projecting superior lobes and in the general form of the colony. From var. *valida* it differs in the greater definiteness of the form of the spicules, *i. e.* in the arrangement of their tubercles in whorls; the deep-lying spicule of the stem is particularly characteristic, with its wide median space, well-defined ends, and heavy compact tubercular whorls; the proportions, generally speaking, of the spicules closely resemble those of var. *valida*.

SPONGODES, *Milne-Edwards & Haime.*

Distinct as species of *Spongodes* commonly look at first sight, it is not so easy to feel positive about specific distinctions. Colour, however, appears to furnish fairly constant characters. Of spicular characters, those of the characteristic "projecting" spicules (as I have below designated those peculiar to the genus), and of the spicules of the stem, seem to give the best promise, especially the condition of the outer end of the former and the shape and the tubercles of the latter. Dr. Gray's character of the arrangement of the zooids on the lobules separates the genus very conveniently into groups. With regard to distribution,

we have not many data. The genus does not appear to have been recorded from the Atlantic and its outlying waters; it seems to be exclusively, or almost exclusively, tropical.

All the species here to be described belong practically to that cymosely-pinnate section of the genus in which the zooids are closely aggregated near the ends of the branches, the first of the groups or subgenera (distinguished as *Spoggododes*) into which Dr. Gray, in his useful paper in Proc. Zool. Soc. 1862, p. 27, divided those species which were in the National Collection at the time at which he wrote. The two species placed by him in that group are *S. florida* (Esper), and *S. spinosa*, described for the first time. Of these two species the latter is the most closely related to the three species to be described below, from the cymose arrangement of the terminal lobules. It is, however, readily distinguished from all of them by the very large terminal spicules and their grouping into very evident spine-like processes. A specimen in the Museum identified (but probably wrongly) by Dr. Gray himself with his species, wants these processes, and has the terminal lobules much more closely aggregated than in the type of the species. It is probably closely related to one of the species here described.

S. Studeri, mihi (Report Zool. Coll. H.M.S. 'Alert,' p. 333), belongs to the same circle of species, uniting the smaller spicules of our species with that more scattered condition of the terminal lobules which characterizes *S. spinosa*. Of other authors' species, *S. capitata*, Verrill, evidently belongs to the same group. It is, however, very difficult to identify species with authors' descriptions, as they mostly show a great want of minute detail.

Judging by the condition of their rooting-filaments, the Mergui species prefer a sandy or gravelly bottom. The specimens in this collection are commonly inhabited by Crustaceans, apparently shrimps of one or more species, which are found wedged in between the branches of the head.

SPONGODES AURORA *, n. sp. (Plate XVII. figs. 20-24.)

Capitate, with very short stalk; rather compressed from back to front. Stem expanding immediately below head into a large fleshy mass, which gives off towards the surface short broad-surfaced lobes which rapidly divide and subdivide, forming outwardly-flattened (sometimes slightly convex) lobules of angular

* "Rosy fingered morn," from the delicate rosy tint which characterizes it.

outline as seen from outside, and of very various size, up to half an inch in diameter, which may either form a continuous surface to the head, or may be set at wide intervals (especially in young specimens). Zooids crowded at about the same level on surface of lobules; diameter in closed state $\cdot 35$ to $\cdot 5$ millim. "Projecting spicules" just visible, viz. rising about $\cdot 6$ millim. beyond level of exterior zooids, but scarcely beyond general surface of the head; single, any accompanying ones not rising above general surface of the lobule. Fleishy axis under lobules smooth; stem longitudinally wrinkled (? from action of the spirit). Colour of stalk and axis of head in spirit usually white, of surface of head rosy pink, the zooids being white and their supporting spicules crimson.

Spicules (the measurements include tubercles):—(1) "*Projecting spicule*" of external zooids of lobule fusiform, slightly flexuous, normally sharply pointed exteriorly, but often blunted, more or less blunted at inner extremity, thickly covered with low sharp or almost sharp tubercles, erect or almost erect, size about $1\cdot 4$ to $1\cdot 8$ by $\cdot 12$ millim. Median portion deep crimson, inner end usually colourless, tip of outer end often very pale. *1a*. Shorter spicule of exterior zooids accompanying the projecting spicules; similar, but generally rather blunted at both ends, tubercles fewer than in (1), and those at inner end abundant, prominent, and directed towards that end; very variable in size; colour much as (1); about five or six to each projecting spicule. (2) Cortical spicules of axis below zooids, except in colour much as *1a*, which apparently represent the uppermost members of the cortical spicules; flexuous, rather blunted fusiform, with slender, smooth, blunted tubercles, not crowded in middle, but crowded and prominent at both ends of spicules; size about $2\cdot 1$ to $2\cdot 5$ by $\cdot 1$ to $\cdot 14$ and (occasionally) $\cdot 21$ millim; colourless (occasionally with faint pink tinge near end of lobule); mainly longitudinally directed on lobule or the chief and subjacent divisions of axis. (3) *Spicules of stem*. Arenaceous-looking in the mass, sufficiently far apart to show their form. Typically globular stellate to slightly elongated, limaciform (slug-like), thickly covered with prominent conical, almost sharp tubercles; shorter diameter about $\cdot 12$ millim.; colourless.

Hab. King Island Bay.

Ten specimens in spirit, of various ages, ranging from about $1\frac{1}{4}$ inch in height upwards. The rootlets are narrow and very

numerous. Judging by mountings made from a representative of each of the two apparent varieties in external form, viz. (*a*) that with closely aggregated lobules, and (*b*) that with wide spaces visible on the surface, there are small corresponding differences in the spiculation, *e. g.* the cortical spicules (no. 2) in (*b*) are rather shorter and stouter than in (*a*).

S. spinosa, Gray, is the nearest described species, judging by the external characters, with which I am acquainted; but the probable type (pink var.) is brown with white projecting spicules. The latter are very much larger than in our form, constituting conspicuous objects to the naked eye; whereas, were it not for their strong coloration, they would scarcely be noticed in *S. aurora*. In *S. Studeri*, mihi, the zooids are decidedly scattered, and do not conceal the cortex, as here. Its coloration and short stalk readily distinguish it from the other two forms described below. The difference between those specimens (var. *a*, above) in which the lobules form a close, continuous covering to the head and those (var. *b*) in which they are separated by wide gaps, in which the bulky white axis is well seen (producing a resemblance to *S. florida*), is instructive, but leaves the arrangement of the zooids on the lobule unaffected as a specific character; it appears, though commonly obtaining in young specimens, to be independent of age, as two or three large specimens exhibit it.

SPONGODES BOLETIFORMIS, sp. n. (Plate XVII. figs. 17-19.)

Erect, distinctly capitate. Stem long (that of the single example about 2 diameters high). Head distinct, sublobate, much compressed, of rounded even outlines. From the stem arise rapidly short broad fungiform lobes which break up, without much intermediate division, into the very variously shaped, exteriorly flattened, and closely appressed terminal lobules, which cover evenly the entire surface in a tessellated manner; diameter of lobules at surface about 2-3 millim.

Zooids arising by short distinct stalks (apparently about .18-.3 millim. long) from the lobule; crowded at surface, almost all attaining the same level, about .7 millim. in horizontal diameter in closed state. Lobule surrounded by the "projecting spicules" of the peripheral zooids, which accompany the latter to the number of 1 to 3 each; they rise but slightly (about .3 millim.) above the surface of the lobule.

Colour in spirit: surface, head pale orange to yellowish white; stem pink, upper part opaque white; axis of head (below lobules) whitish, subtransparent.

Spicules (the measurements including tubercles):—(1) *Projecting spicule* of external zooids: long, slender, fusiform, slightly flexuous, tapering to fairly sharp points; tubercles of median portion small, rounded, rather crowded, erect; those of interior end similar, but outwardly directed (towards apex of spicules), up to about .02 millim. long; exterior end of spicule bare, or with slight indications of tubercles, and with a scraped (? substriated) appearance; largest about 2.5 by .14 to .16 millim. (smaller projecting spicules measure about 1.5 by .1 millim.). (2) *Large spicules of cortex* of axis below lobules as (1), but larger and with both ends armed with tubercles projecting towards their own end of the spicule; size about 3.0 by .14 millim.; chiefly longitudinally arranged on the axis and its divisions. (3) *Spicules of stem*: arenaceous-looking in the mass (up to about .1 millim. in the shorter diameter), too crowded to show their forms well, but apparently short thick forms, with abundant smooth rounded tubercles. Colours of spicules the same as those of the parts of the colony at which they are found.

Hab. King Island Bay.

The single specimen is preserved in spirit; it bears three lobes, more or less distinct, one median and superior, two lateral and inferior. Total height $3\frac{3}{4}$ inches. The head measures about $2\frac{3}{4}$ inches in greatest (lateral) diameter, 2 inches in vertical diameter, mean thickness about $\frac{3}{4}$ inch; stem about 2 inches high (by 1 inch in lateral, and $\frac{3}{4}$ inch in antero-posterior diameter), but proportions perhaps affected by distortion (shown by its very wrinkled condition). A number of thin ribbon-like flat roots, 1.5–3.0 millim. wide, proceed from the lower surface of the stem, and have much shelly sand attached.

This species resembles, in outward form, the species described by Dr. Gray as *Morchellana*, which seems, however, to be only a damaged *Spongodes*; but in that species the zooids are scattered and not closely grouped.

SPONGODES NIGROTECTA, n. sp. (Plate XVII. figs. 13–16.)

Erect, distinctly capitate. Stem long (its length in the single example about 3 times the maximum diameter), rather compressed from front to back (the lateral diameter being twice the antero-

posterior), strongly wrinkled longitudinally in spirit, except just below head, where it is wrinkled horizontally, as also are most of the divisions of the axis. Head of rounded, even outlines, slightly antero-posteriorly compressed, incipiently lobate. Stem giving rise above to a small number of short broad lobes, which break up almost directly and with very few intermediate divisions into the exteriorly more or less convex terminal lobules, which are almost in contact laterally, and give a racemose appearance to the head; lobules at surface about 2-3 millim. in diameter. Zooids crowded at one level all over the rounded end of the lobule, about .6 millim. across when closed. "Projecting spicules" sometimes just visible above lateral border of lobule, but not rising to general level of the head; the cortical spicules of the axis are chiefly horizontally arranged in the larger divisions of the axis, tending to become longitudinal towards the zooids.

Colour in spirit dirty white, with the exception of the upper part of stem, which is opaque white, and of the zooids, which appear normally to be black, but to be commonly bleached by spirit.

Spicules (measurements including tubercles):—(1) *Projecting spicule* of external zooids, fusiform, slightly flexuous, with sharp inner extremity, thickly covered throughout with rather prominent but slender, bluntly pointed, smooth tubercles; those of inner end backwardly directed (towards apex of spicule); size about 1.0 by .09 millim.; colourless. (2) Spicules of cortex of axis below lobules fusiform, rather flexuous, fairly sharp at both ends, closely covered by slender, prominent, but blunted and often roughened tubercles, those of ends relatively larger and commonly more or less directed towards their respective ends; size of largest about 2.1 by .14 millim. (3) Scantly scattered in the cortex, very stout and blunted forms, similar to (2), but measuring about 2.6 by .18 millim.; colourless. (4) Spicules of lower part of stem fantastically and variously branched forms, apparently modifications of a cylindrical or fusiform type; short diameter of axis commonly about .07 millim.; with broad black axial band or almost entirely black.

Hab. King Island Bay.

Total height of single specimen (in spirit) 3 inches, lateral diameter of head and diameter from stalk to top, both about 3 inches; head, back to front about 2 inches. The stem ends below in thin ribbon-like rootlets about 1-2 millim. wide. The

colour of the zooids appears to reside wholly in the soft parts (the tentacles?), which appear dark brown to black under the microscope.

This form appears markedly distinct from all species of which satisfactory information can be obtained; but in its colour *S. capitata* of Verrill possibly resembles it; this is described (Bull. Mus. Comp. Zoöl. Harvard, i. p. 40) as yellowish grey, and the spicules as white, not very conspicuous, the large ones not very numerous. From its neighbours, *S. aurora* and *boletiformis*, it is well separated by its colour, by the transverse wrinkling of the axis and upper part of the stem, and (connected with this last point) the horizontal position of some large spicules in the cortex of the axis; the much branched condition of the proper spicules of the stem is another point distinguishing it from these two species.

Family GORGONIIDÆ.

PLEXAURA INDICA, n. sp. (Plate XVIII. figs. 1-5.)

*Ramosé, flabellate, with decided tendency to unilateral pinna- tion; after the first one or two divisions the branches assume a suberect position †; origins of lower branches about $\frac{3}{4}$ to 1 inch apart, those of upper ones very distant; terminal pinnae very long (may attain a length of 6 inches), bluntly rounded or slightly clavate. Lower branches subcylindrical or flattened, flattening especially marked just below origin of branches; terminal pinnae cylindrical, commonly somewhat clavate. Base spreading widely. Cortex in dry state about .3 to .5 millim. thick near base, about .6 millim. thick near periphery of colony; colour strong scarlet. Verrucae small, depressed below the general level of the cortex, oval in outline, with the long diameter parallel to that of the branches, and about .5 millim. in this dimension; thickly distributed over every part of the branches, viz. about .5 to 1.0 millim. apart.

Axis of stem subcylindrical, with distinct though irregular (in the single dry specimen) longitudinal grooves, black; that of

* Description taken, except where otherwise stated, from the large dry specimen.

† In both the specimens, one or more of the lower branches are given off almost horizontally, and their pinnae originate almost at right angles from their upper sides.

the base strongly ridged in a radiating manner, dull brown; that of main branches near their origins cylindrical or subcylindrical; of rest elk-horn-like, viz. strongly flattened*, and near points of division much expanded and hollowed out in the middle, and reduced to a thin sheet, hard, subelastic; the ends of terminal branches very flexible, commonly shading off from black to yellow-ochre, with very large central cavity, occupying about $\frac{3}{4}$ of the thickness of the twig in the dry state, about $\frac{2}{3}$ the thickness in spirit. Shape, in spirit, cylindrical; in dry state flat.

Spicules (measurements excluding tubercles):—I. *Cortical*.

(1) Foliate ("Blattkeule," Kölliker), very variable in form, blade very thick, either single, subcircular, margin slightly undulating to strongly toothed, and either smooth or with one or more strong ridges or elongate tubercles on the face, or with several tooth-like processes in the place of the blade; handle of two to four or more prongs or more or less amorphous, with good-sized tubercles. Adult spicule about .23 to .27 long by .16 to .18 millim. broad; those with toothed blade about .21 by .12 millim. Colour ochreous yellow. (2) Fusiform, commonly sharply bent at middle, tapering from centre to fairly sharp points, strongly tuberculate; median tubercles up to .03 millim. long, rounded, the rest shorter, tending to become pointed; size about .21 by .035 millim.; colour pink.

Also (?) radiate forms of similar character; also some perhaps subcortical, small, very variable in shape, bacillar to scale-like or subglobular (?), thickly covered with large tubercles; size about .1 to .18 by .028 to .035 millim.; colour pale brown.

II. *Spicules of Verrucæ*.—(1) Triradiate &c., two of the arms supporting the body-walls of the zooid, about .25 millim. across, greatest thickness about .035 to .048 millim. (2) Stout linear forms, shaft subcylindrical, tending to fork at one end, pointed at the other, arranged radiately around (?) verrucæ; tubercles rather blunt and minutely roughened; size up to about .35 by .062 millim.; colour pale pink. (These are the leading types; the range of variation is, however, very great.)

Hab. King Island Bay.

Distribution. Ceylon? (*fide* drawing in coll. Dr. Ondaatje).

This is a fine showy species. It is represented in the series before me by two specimens. Of these one is dry; it measures

* In spirit-specimen nearly cylindrical, being filled with a soft material. Cf. Kölliker, *Icon. Histiol.*

about 12 inches in height, by about the same in its probable original lateral extent; it has about 80 or 90 terminal branches; the stem is about $1\frac{1}{2}$ inches high, and it gives off its next branches in rapid succession. The second specimen is in spirit, and from its size and slightly branched condition is pretty obviously young; it is $4\frac{1}{2}$ inches high by about $2\frac{1}{4}$ in greatest width, the stem is $1\frac{1}{3}$ inches long; it gives off four branches alternately, and ends in the middle of its branches in a cluster of Cirrhipede galls; the most branched of the axes to which it gives rise sends off one horizontal shoot, from which arise at almost right angles three secondary twigs, so that this rectangular mode of branching is probably specific; the stem and branches are approximately cylindrical, the places of bifurcation being slightly flattened; the tips of the pinnæ are slightly clavate; colour in spirit dark vermilion.

This species is mainly characterized by its colour.

Lamouroux, the first to distinguish the genus, says, in 1816 ('Hist. Polypiers Coralligènes flexibles,' p. 428), that the Plexauras show none of the light tints of the Gorgonias, so he could not have known of this form. No similar species seems to have been since described.

There is some superficial resemblance between *Plexaura indica* and *Echinomuricea indomalaccensis*, Ridley (Rep. Zool. Coll. H.M.S. 'Alert,' p. 336, see pl. xxxvi. figs. B, B'), and *Echinogorgia pseudosappo*, Kölliker (Icon. Histiol. p. 136), also from the East Indies; *E. sasappo*, Esper, is another scarlet species from the East Indies. We very possibly have here some mimicry; the *Echinomuricea*, being well protected by its projecting verruca-spicules, may perhaps be imitated by its smoother companion.

Judging from some well-executed drawings of spicules in the collection of Dr. Ondaatje, and lent by him to the Museum, this species appears to occur on the Ceylon coast.

PSAMMOGORGIA? PLEXAUROIDES, n. sp. (Plate XVII. figs. 1-6.)

Corallum erect, ramose, typically flabelliform, of straggling growth. Stem (in the single example) short, apparently typically alternately pinnate, varied by unilateral pinnation in crowded parts; branches given off at intervals of about $\frac{1}{2}$ to 1 inch, at about right angles, the angle tending to become acute towards periphery of corallum; terminal pinnæ commonly about 6 inches

long, slightly clavate at ends. Anastomosis exceptional. Base spreading (about $\frac{3}{4}$ inch across in the single specimen). Stem and branches cylindrical. Stem about 4 millim. thick, terminal pinnæ about 1.75 to 2.25 millim. thick below their terminal enlargement. Cortex firm, pale umber-brown, sprinkled with the black verrucæ; minutely granular, of thickness of tissue-paper on stem, about .5 millim. thick on terminal pinnæ. Verrucæ strongly elongate in the direction of the axis of the branch, opening flush with the surface on the terminal pinnæ, on main branches often forming slightly elevated rings, about 1 diameter apart in the terminal pinnæ, increasingly scattered towards the stem (about 2-4 diameters apart); long diameter about .5 to .75 millim.; equally distributed all round the axes.

Horny axis very dark brown, hard and wiry, imperfectly flexible; near the ends of the pinnæ provided with wide central cavity.

Spicules (the measurements here include the tubercles).—Exact distribution in corallum not certainly made out*; the following chief types occur:—(1) Short, thick, cylindrical, with rounded ends, densely covered with rather small, low, blunt, broad tubercles, much roughened minutely; size about .14 to .18 by .07 to .1 millim. (2) Cylindrical, with two more or less distinctly marked whorls of tubercles, each whorl made up of about 5 tubercles; it terminates in one or two tubercles, or an expansion resembling a large tubercle, at each end; shaft cylindrical, about .026 millim. thick, with slight median bare space; tubercles about .026 millim. high and broad, fungiform, proliferating into a number of secondary rounded tubercles, giving a beautifully filigreed appearance to the spicule; total size of spicule about .12 by .007 millim. (3) Cylindrical, with two whorls of rough-hewn, broad, simple, and angular or knobbed tubercles, more or less definitely arranged in two whorls of about 4 each, and terminal ones; no distinct median bare space, and often no distinct terminal tubercles, or these, if present, low and crowded up against those of the whorls; proportions of spicule and its parts about same as those of (2). (4) Cylindrical, almost truncate at the ends, hence with suboblong or irregular, slightly constricted outline, either bare, with an irregular roughly-hewn look, or beset

* The coloration of the interstitial soft matter, combined with the absence of colour in the spicules, rendered it impossible in the time at my disposal to ascertain this point as usual from rough sections and teased specimens.

with low angular facets, about $\cdot 026$ millim. in greatest width, rather than tubercles; the spicule in any case looks as if it had been shaped with a blunt knife; there is no indication of whorls except the median constriction; size about $\cdot 12$ by $\cdot 052$ to $\cdot 07$ millim.; abundant.

Quadruple forms of stellate appearance, with surface presenting the character, now of (3), now of (4), and measuring about $\cdot 09$ to $\cdot 12$ millim. across, are common. All the spicules are colourless and transparent.

Hab. King Island Bay.

I have given the specific name on account of the great superficial resemblance to a *Plexaura* which is exhibited. This fine and interesting species is represented by a single dry specimen rooted to a rock; when spread out in life it may have stood about 12 inches high by 16 in greatest width. The agreement in proportions between the different kinds of spicules, though not a novel phenomenon in the Alcyonaria, is yet remarkable from its closeness, and perhaps indicates a common origin of, at any rate, spicules Nos. 2 and 3; perhaps the strange form No. 4 may be regarded as of independent origin. Nos. 1 and 2 differ markedly both from the latter and from each other (1) by the size, (2) by the character of their tubercles. No. 2 resembles in character the fusiform spicules of *Leptogorgia*; No. 1, some (?) in *Muricea umbraticodes*, Studer; No. 4 is peculiar, so far as I am aware, to this species, it being only distantly approached by the fusiform spicules of *Suberogorgia* (*Sclerogorgia*) *verriculata*, as figured by Kölliker (Icon. Histiol.). The angular character of the tubercles is found also in the (however, much more constant and regularly formed) spicules of *Isis* and *Corallium*. It should be noted, as bearing upon the question of affinity, that all the spicules are symmetrically equal-ended and symmetrically tuberculate, which points rather to Leptogorgian than Plexaurid or Primnoid affinities, if such should be suggested for it. It is not unlikely that the species ought to form the type of a new genus, but I am not sufficiently confident of being able rightly to lay down the characters of the genera in this section of the Alcyonaria, and, in my ignorance of the distribution in the corallum of the different forms of spicules, I have thought it best to place it with *Psammogorgia* (Verrill, Trans. Conn. Acad. i. p. 414) for the present, as it has many points of resemblance to that genus, as defined by its author (*loc. cit.*), although no "clubs"

are present here, and spicule No. 4 is not represented in *Psammogorgia*. On the other hand, it resembles *Leptogorgia* in the form and tubercles of the elegant spicule No. 2.

GORGONIA*, sens. strict.

(*Gorgonia*, sens. mod., *Verrill, Amer. Journ. Science*, (2) xlvi. p. 424.)

The "Klammer" type of spicule ("bracket- or crescent-shaped," Verrill, *l. c.*; "scaphoid," Kent, *Monthly Microsc. Journ.* iii. 1870, p. 90), by which this section of Gorgonaceans is characterized by Kölliker and Verrill, is developed in various degrees of definiteness, and besides being pretty obviously only a modification of the regular fusiform type prevailing in this and the allied genera, differs but slightly from it in some species, as in the one now to be described; hence the difference between *Gorgonia* and *Leptogorgia* (Verrill) becomes but a slight one. Still the genera should perhaps be maintained distinct, if only to preserve order among the numerous species composing the group. *Gorgonia*, however, unites types characterized by very diverse external forms (e. g. *Hymenogorgia*, *Xiphigorgia*, *Pterogorgia*, *Rhipidigorgia*); but there is at any rate one probably natural group among them, viz. the pinnately branched form (*Pterogorgia*).

GORGONIA OPPOSITIPINNA, n. sp. (Plate XVIII. figs. 7-11.)

Corallum erect, ramose, typically flabelliform. Base very narrow. Stem (in single specimen) very short. Mode of branching after the first division almost wholly oppositely pinnate, tending to become alternately pinnate towards the periphery; pinnæ in lower part of colony about $\frac{1}{2}$ inch apart, towards periphery up to about 2 inches; terminal pinnæ up to 3 inches in length. Pinnæ given off at angles of about 65° in

* *Note*.—I take this opportunity of correcting an error into which I fell in the description of the Alcyonaria brought home by H.M.S. 'Alert' (Report Zool. Coll. H.M.S. 'Alert,' London, 1884). *Leptogorgia australiensis*, mihi (*loc. cit.* p. 342, pl. xxxvi. figs. c, c', c, c'), should stand as *Gorgonia australiensis*, for the following reason. It occurred to me, on considering the pinnate arrangement of the branches, to re-examine the spicules to see whether I had possibly overlooked, from its resemblance to the fusiform, the occurrence of a scaphoid spicule here; I found it to be so. The scaphoids of *G. australiensis* are closely similar to those here figured for *G. oppositipinna*, indeed the long ones are practically identical with those of that species.

lower part, to about 50° near outside of colony. Stem and branches very slender; the stem and the branches immediately succeeding subcylindrical, the rest gradually clavate, strongly flattened, of undulating outline owing to the slight uniserial marginal projections which carry the verrucæ; terminal pinnæ sharply pointed; greatest diameter ranging from 1.5 millim. in the stem and chief branches to about 1 millim. in the terminal pinnæ. Cortex firm, harsh to touch, minutely rough, dull crimson in spirit, of about tissue-paper thickness in stem and base, but rapidly acquiring a thickness (on the margins of the branches) of about .3 to .5 millim. Verrucæ apparently very minute, uniserially arranged along margins of branches, flush with surface. Axis very tough and wiry, flexible, near base almost black, but throughout most of the colony brown to amber-yellow.

Spicules (measurements including tubercles):—Fusiform, of two sizes, tapering gracefully from the centre to fairly sharp points, and with the ends commonly gently bent to opposite sides, and, as usual with the "bracket" spicule, moderately curved from front to back, with two very distinct median whorls of tubercles, and generally one whorl besides at each end beyond these, indicated by aggregation of low tubercles, the terminations of the spicule being clothed with similar tubercles not distinctly grouped. The median tubercles exfoliating elaborately into bushes of secondary tubercles, which are, however, absent at the "back" of the spicule; the remaining tubercles low, broken up into bead-like secondary tubercles. Spicules respectively about .18 by .052 to .06 and .14 by .048 to .052 millim. Colour bright crimson-scarlet.

Hab. King Island Bay, sublittoral.

Represented by a single spirit-specimen about 7 inches high by about 6 inches in greatest lateral extent. Owing to luxuriant branching at short intervals, it appears to consist of several parallel fronds; but these are really only the several branches with their offshoots, lying in front of one another, probably from want of lateral space and owing to the angles at which they are given off.

There are several known species closely allied to this form, especially the species above referred to (footnote, p. 238). *Gorgonia* (*Leptogorgia*) *australiensis*, Ridley, from Torres Straits, is chiefly distinguished from this species by its stout stem and its more acute angle of branching—the pinnæ are, however,

subopposite, as here, and should have been so described (the figure of the corallum brings out this point)—perhaps by the double series of verrucæ at the margins of the older axes, by the colour (yellow, orange, or dull red); but especially by the very different and less graceful form of the smaller spicule, which is commonly only about .12 millim. long, and, having a large sub-terminal whorl of tubercles, looks almost blunt (fig. *c'*, *loc. cit.*).

GORGONELLA UMBELLA, *Esper*.

Gorgonia umbella, *Esper*, *Pflanzenh. Fortsetz.* ii. p. 30, pl. liii.
—*Gorgonia umbella* (probably), *Dana*, *U.S. Expl. Exped., Zooph.* p. 657.—*Rhipidigorgia umbella*, *Milne-Edwards & Haime*, *Hist. Nat. Coralliaires*, i. p. 175.—? *Gorgonia umbella*, *Kölliker*, *Icon. Histiol.*

From *Esper*'s description and figure I refer to his species a form which has stood under the above name for some time in the Collection at the Museum. It presents both "double-head" and fusiform spicules. *Kölliker*, however, places *Esper*'s species in that section of the genus *Gorgonia* which is characterized by spindles only, and not in his genus *Gorgonella*, into which our species (by virtue of its spiculation at any rate) naturally falls. Unfortunately neither *Kölliker*, *Verrill*, *Studer*, nor *Klunzinger* appear to have described the spicules of *Esper*'s species, although *Verrill* (*Amer. Journ. Sci.* xlviii. p. 422), probably following *Kölliker*'s initiative, thinks it may probably belong to his genus *Leptogorgia* as remodelled, *loc. cit.* However, the spicules of this species coincide well with those described and figured by *Kölliker* for *Gorgonella* (see especially *Gorgonella granulata*, *l. c.* p. 140, pl. xviii. fig. 43).

Hab. King Island Bay.

Distribution. Probably Bengal Seas (*Esper*).

A small dry specimen, and one in spirit probably belonging to the same species, were the material to be examined.

JUNCELLA, *Valenciennes*.

This is a most difficult genus. Looking at the variations in the external form and in the spicules of the specimens here referred to this genus, and comparing them with facts previously known about it, one is struck by the extremely slight nature of the points separating some of the species. Had not *J. juncea* and *J. fragilis* been simple, while the present specimens of *J. gem-*

macea are branched, it would have been difficult to distinguish the three species, as in spiculation every fresh specimen appears to present some slight difference, while the total differences of spiculation in these species are slight, and thus admit of little specific distinction. Then, again, *J. gemmacea*, though commonly branched, may be simple. Colour, too, appears to afford equally little help in the determination of species. The form, size, and distribution of the zooid-verrucaë and the proportions of the corallum as a whole, seem to be the best points to rely upon. *J. elongata*, however, seems to be distinct in spiculation.

JUNCCELLA GEMMACEA, var.

Verrucella gemmacea, *Milne-Edwards & Haime, Hist. Nat. Coralliaires*, i. p. 185, pl. B. 2. fig. 7.—*Ellisella gemmacea*, *Gray, Catalogue Lithophytes or Stony Corals, &c.* p. 26.—*Juncella gemmacea*, *Kölliker, Icon. Histologica*, p. 140, fig. 191.—*Juncella gemmacea*, *Studer, Monatsbericht k. Akad. Wiss. Berlin*, 1878, p. 659.—*Juncella gemmacea*, *Klunzinger, Korall. Roth. Meeres*, pt. i. p. 55.—*Juncella gemmacea*, *Ridley, Report Zool. Coll. H.M.S. 'Alert,' Brit. Mus.* pp. 346, 580.—*Juncella elongata*, var., *op. cit.* p. 346.

In the 'Alert' Report I applied the above name to some very slender unbranched specimens with very prominent calicles, and varying in colour from orange to scarlet. The present collection contains two specimens which probably should also be referred here. Of these one is dirty white or cream-colour, branched very frequently, forming quite a dense head of short branches (about $\frac{1}{2}$ to 2 inches between bifurcations); the other is a fragment of a deep red colour, with very few and long branches (probable original length fully 6 inches); the maximum diameter of the axes (without the verrucaë) is about $3\frac{1}{2}$ millim. in both cases; a slight bare line is constantly present on one face of the red specimen, and on both faces, in parts at any rate, of the white specimen; verrucaë small, crowded; branching dichotomous. The club-spicules are elongate, and the double stars are equally or almost equally ended, and have few and prominent blunt tubercles.

The specimen described in the 'Alert' Report from the N.E. coast of Australia, and probably also that possibly from Formosa, referred to (p. 347) as *Juncella elongata*, Pallas, var., appear to be nothing more than the present species, it having been apparently overlooked that Pallas's species has no club-spicules (Kölliker,

Icon. Histiol. p. 140)—perhaps owing to my being misled by two wrongly identified specimens in the Museum Collection. A specimen from Malacca, recently received at the Museum, seems to be identical with this species; it agrees essentially with the red specimen from Mergui. The original specimen figured by Milne-Edwards and Haime is cream-coloured, the branches have their longer diameter (exclusive of verrucæ) 5 millim.; the stem apparently attains a thickness of 7 millim.; it is distantly branched.

From these facts it will be seen that we probably have a very variable species before us, colour, form, and size being alike not to be depended on by themselves; the spiculation is fairly constant, but differs so little from that of allied forms (*J. juncea* and *J. fragilis*) as to be scarcely a sufficient guide *per se* to the recognition of the species.

Hab. King Island Bay.

Distribution of Species.—Red Sea (*Milne-Edwards & Haime, Klunzinger*); Mascarene Islands (*'Alert' Coll.*); N.W. Australia (*Studer*); N.E. Australia (*'Alert' Coll.*); Malacca (*Coll. Brit. Mus.*); Burmah coast (*Coll. Mus. Calcutta*); Singapore (*Klunzinger*).

It may be of interest to note that in the pale specimen occur two cases of anastomosis between branches, but this is pretty obviously due to the crowded condition of the branches having caused mutual apposition; at any rate, in the case of the two shorter branches thus united the horny axes themselves are thoroughly fused together.

JUNCCELLA FRAGILIS?, var.

Juncella juncea (*Esper*), *Kölliker, Icon. Histiol.* p. 140, pl. xviii. figs. 45, 46.—? *Juncella fragilis*, *Ridley, Report Zool. Coll. H.M.S. 'Alert,' Brit. Mus.* p. 347, pl. xxxvi. fig. D.

Under the above species I place with doubt two forms which occur in this collection, viz.:—(1) White or cream-coloured. The only specimen of this which was placed before me has the apex gone. It is 14 inches long, and probably when perfect was quite four if not six inches longer; maximum diameter about 4 millim. A group of four specimens, probably all referable to this variety, occurs among the Sponges, overgrown by the sponge *Esperia plumosa* (*Carter, supra*, p. 72). One of these has a greatest thickness of 5.5 millim. near its broken distal extremity. (2) A much decorticated pale brick-red specimen, now about 15 inches

(originally perhaps 16 to 18 inches) long, maximum present diameter 5 millim.

The spicules differ slightly from those of the type as represented by the original mounting, viz. in the greater prominence of the tubercles of the double stars; they are, as a rule, decidedly unequally ended in the white, and about as often as not in the red, specimen; but this point is much more strongly marked in the original specimen than in that from Mergui. In fact, both in this particular and in the larger growth of the corallum the latter makes a considerable approach to *J. juncea*, that species being now mainly distinguished from *J. fragilis* by its greater size, its red colour, its equal-ended double stars, and its larger and more distant polype-verruca, and the space bare of verruca just above the base.

As regards colour, pale varieties of red species are already known in the genus, also in the case of *J. gemmacea* (see above).

Thus these specimens seem to stand midway between *J. juncea* and *J. fragilis*, and may prove to be merely young forms of the former species. The original specimen of the species has a very flexible axis, while these specimens are comparatively stiff.

Hab. King Island Bay.

Distribution. N.E. coast of Australia ('Alert' Coll.).

CTENOCELLA PECTINATA, Pallas.

Gorgonia pectinata, Pallas, *Elench. Zoophytorum*, p. 179.—*Gorgonella pectinata*, Kölliker, *Icon. Histiol.* p. 140, pl. xviii. fig. 41.

A fine specimen, 30 inches or upwards in height (now broken); branching luxuriant; spiculation normal.

Hab. Elphinstone Island.

Distribution. Indian Ocean (Pallas); seas of Moluccas (Lamarck); Torres Straits ('Alert' Coll.); North-west coast of Australia (Studer); Cuba (*Brit. Mus.*); "India, China" (Gray).

By the absence of this familiar species, as by that of *Suberogorgia suberosa*, the Red Sea fauna shows its distinctness from that of the Indian Ocean.

SUBEROGORGIA SUBEROSA, Pallas.

Gorgonia suberosa, Pallas, *Elench. Zooph.* p. 191.—*Suberogorgia suberosa*, Gray, *Proc. Zool. Soc.* 1857, p. 159.—*Sclerogorgia suberosa*, Kölliker, *Icon. Histiol.* p. 142, pl. xix. fig. 13 (2).—*Sclerogorgia suberosa*, Studer, *Monatsber. k. Akad. Wiss. Berlin*, 1878, p. 666.

A dry specimen about 14 inches in height (if it ever stood upright), firmly rooted to a piece of quartz, over which the base spreads as a thin lamina nearly 5 inches by 3 inches in breadth.

The longer spicule of this species appears to be confined to the deeper parts of the cortex, hence is liable to be overlooked.

Hab. King Island Bay.

Distribution. "Sea which washes South Africa, and Indian Ocean" (*Pallas*); N.W. coast of Australia (*Studer*); Port Denison, Queensland, and Torres Straits ('*Alert*' *Coll.*); Mauritius (*Coll. Brit. Mus.*).

This species, so abundant in the Indian Ocean, is, like the preceding one, apparently not found in the Red Sea (*cf. Klunzinger, Korall. Roth. Meeres*, pt. i. p. 57).

Family MELITHÆIDÆ.

MOPSELLA PLANILOCA *, n. sp. (Plate XVIII. fig. 6.)

Corallum strong, flabellate, reticulate. Basal portion massive, unjointed, dividing into several short, imperfectly joined axes, which proceed to break up, by branching at very acute angles, into fronds composed of very narrow elongate meshes, in which comparatively little distinction between the stoutness or length of the internodes (hard joints) and little difference in the thickness of the branches can be made out from top to bottom of the frond; nodes (soft joints) diminishing in stoutness from below upwards; meshes 3 millim. in average short diameter; long (vertical) diameter very variable (3 to 45 millim. observed), owing to the great variation in the completeness to which the anastomosis of the branches is carried, and the difference in length between the short lower and the longer distal internodes (the latter forming the greater number of the whole); distal internodes slightly tortuous, round to oval in transverse section, but generally somewhat antero-posteriorly compressed, fairly constant in length, viz. 9 millim.; thickness (in median to subterminal branches) about $2\frac{1}{2}$ by 2 millim. *Nodes* rugged, subglobular, rather compressed laterally, commonly with an angular margin below, ranging in diameter from about 7 millim. in the proximal to 2 millim. in the distal or subterminal nodes. Colour of the *axis* of the nodes and of the spongy proximal internodes pale brick-red, that of distal internodes rather deep pink. *Cortex* thin (equal to rather thick

* From the level character of the cœnenchyma.

paper), even and smooth, ground-colour pale vermilion. Polype-verrucae, whether closed or open, flush with surface, lemon-yellow in colour, very small (about $\frac{1}{3}$ of a millim. when closed), closely aggregated on the cortex (a very narrow bare posterior line being sometimes left).

Spicules exhibiting a great range of form. The following are the chief types distinguishable:—I. *Cortical*. 1. Foliate spicule ("Blattkeule," Kölliker), of subquadrangular outline, with several sharp, slender tooth-like leaves, often jagged, but with margins otherwise usually entire, and a low mass of small tubercles representing the "handle" of the usual form of this spicule, which may therefore be described in this case as "very high-shouldered"; size about .07 to .088 long by .052 to .07 millim. broad. Colour crimson, ends of the leaves colourless, or almost so. 2. Fusiform, subclavate or irregular spicules of very various proportions, but usually with a slender body and long, rugged, rather distant tubercles; size up to about .18 by .018 to .03 millim., excluding tubercles. Colour pale crimson. Perhaps confined to the neighbourhood of the verrucæ.

II. *Verruca-spicules*.—1. Long-handled foliate spicules (Blattkeulen), with short, usually few, rather wide, jagged leaves, and thick, strongly tuberculate handles; size up to about .14 by .055 millim. (Placed with the leaves fringing the opening of the verrucæ.) Colour yellow. 2. Long, graceful fusiform, with moderately-sized rounded tubercles on the convex side; size up to about .2 by .012 millim. Colour yellow. Forming a ring, overlapping slightly at their ends, round the zoid cavity. 3. Cylindrical or flattened, of various shapes, fusiform to irregular, may be curved; tubercles variable in size, mostly rather simple and rounded; size up to about .14 to .16 by .018 to .035 millim. Arranged so as to form triangular segments, forming valves over the zooids. Colourless or (?) faint lemon-yellow.

Hab. Elphinstone Island.

The specimen, which has suffered damage at its margins and extremities, measures about 7 inches high and 8 inches wide and $\frac{3}{4}$ inch in thickness at base. The originally flat frond has proliferated somewhat, forming two subparallel series of secondary fronds.

In coloration the species resembles that form of *M. aurantia* which is figured by Esper (Pflanzenh.) as *Isis coccinea*, and may be termed var. *coccinea*; but the distal internodes in that species

are generally stouter, shorter, and curved, and the verrucæ prominent, even in the closed condition. By its long, straight, and slender distal internodes and the distribution of its colours, it has more the appearance of *Melitodes virgata*, Verrill, or of purple varieties of *M. ochracea*; but a specimen of the latter in the Museum differs in its very wide posterior bare area in both ultimate and middle branches and its very squarely-cut nodes (perhaps the colour and resemblance is largely due to fading, &c., of both specimens). The ground-colour of *M. virgata* is (as implied by Gray's synonymic appellation, *atrorubens*) a very dark red.

An undescribed species in the British Museum has rather stouter terminal twigs and more or less prominent verrucæ, is non-reticulate and non-flabellate, and is further at once distinguished from *M. planiloca* by the evenly-rounded foliar lobes of the "Blattkeule" spicule, and by the apparent absence of the graceful fusiform spicule, and its replacement (?) by an irregular nodular form. Perhaps, however, this is the most closely allied known species. As positive characters of the new species may be indicated the "high-shouldered" form of the foliate spicule, the very slender cortical fusiform spicule, the very thin, smooth cortex, and very small unprojecting verrucæ. The spiculation strikes me as being more varied than that of any Melithæid known to me, but this may be due to defective observation as regards the remaining species.

DESCRIPTION OF THE PLATES.

PLATE XVII.

- Fig. 1. *Psammogorgia? plexauroides*, n. sp. Portion of colony (dry). Nat. size.
 2. The same. Tip of pinna. $\times 2$ diam.
 3. The same. Spicule No. 2 of description. $\times 250$ diam.
 4. The same. Spicule No. 3 of description. $\times 250$ diam.
 5 & 6. The same. Spicule No. 4 of description, varieties. $\times 250$ diam.
 7. *Lobophytum madreporoides*, n. sp. Portion of colony, showing stem &c. (spirit). Nat. size.
 8. The same. Small portion from surface of pileus to show an autozooid and siphonozooids. $\times 6$ diam.
 9. The same. Deep spicule of stem, No. 1 of description. $\times 250$ diam.
 10 & 11. The same. Spicules of zooid-bearing portion. $\times 250$ diam.
 12. The same. Superficial spicule of zooid-bearing portion. $\times 250$ diam.
 13. *Spongodes nigrotincta*, n. sp. Portion of head (spirit). Nat. size.
 14. The same. A lobule. $\times 6$ diam.
 15. The same. Projecting spicule. $\times 55$ diam.
 16. The same. Spicule of general cortex. $\times 55$ diam.

- Fig. 17. *Spongodes boletiformis*, n. sp. Portion of head (spirit). Nat. size.
 18. The same. Lobule. $\times 6$ diam.
 19. The same. Projecting spicule. $\times 55$ diam.
 20. *Spongodes aurora*, n. sp. Portion of head (spirit). Nat. size.
 21. The same. Small portion of head. $\times 6$ diam.
 22. The same. Large spicule of cortex of head. $\times 85$ diam.
 23. The same. Projecting spicule. $\times 85$ diam.
 24. The same. Spicules of stem. $\times 250$ diam.

PLATE XVIII.

- Fig. 1. *Plexaura indica*, n. sp. Small specimen in spirit. Nat. size.
 2. The same. Portion of larger (dry) specimen. $\times 2$ diam.
 3. The same. Foliate spicules of cortex. $\times 250$ diam.
 4. The same. Radiate spicule of verrucæ. $\times 250$ diam.
 5. The same. Fusiform cortical spicule (No. 2 of description). $\times 250$ diam.
 6. *Mopsella planiloca*, n. sp. Foliate spicule. $\times 300$ diam.
 7. *Gorgonia oppositipinna*, n. sp. Portion of type specimen (spirit). Nat. size.
 8. The same. Portion of branch. $\times 4$ diam.
 9 & 10. The same. Larger scaphoid spicule. $\times 250$ diam.
 11. The same. Smaller scaphoid spicule. $\times 250$ diam.

On two Species of Actiniæ from the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. John Anderson, F.R.S., Superintendent of the Museum. By Professor ALFRED C. HADDON, M.A., M.R.I.A. (Communicated by Dr. JOHN ANDERSON, F.R.S., F.L.S.)

[Read 16th June, 1887.]

(PLATES XIX. & XX.)

Two species of Actiniæ from the Mergui Archipelago were submitted to me by Dr. John Anderson, both of which have proved to be undescribed.

The more interesting form, which is the type of a new genus, was unfortunately in such a bad state of preservation that most of the epithelial tissues had entirely disappeared. Although this specimen was partially dissected and a portion removed for microscopic examination, care was taken not to destroy its value as a Museum specimen.

The other species was represented by three specimens, one



